Metallic heart sound

N

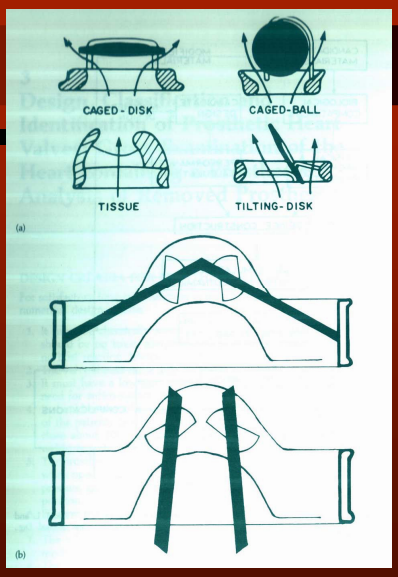
Y

Tissue

Mechanical

Ball

Disc



Murmur with a scar

Prosthesis type	Aortic position	Mitral position
Caged ball valves	S_1 AO, AC P_2	MC, S_2 MO
Tilting disc valves	S_1 AO, P_2 AC	MC, S_2 MO

Sharp opening sound

Sharp closing sound

Soft opening sound

More durable but more haemolysis

More thrombogenic

TABLE 2. CHARACTERISTICS OF VARIOUS PROSTHETIC VALVES.

VALVE TYPE	DURABILITY	EFFECTIVE ORIFICE AREA* AORTIC	EFFECTIVE ORIFICE AREA* MITRAL	THROMBOGENICITY†
		cm²		
Caged-ball	Excellent	1.2–1.6	1.4–3.1	++++
Single-tilting-disk	Good to excellent	1.5–2.1	1.9–3.2	+++
Bileaflet-tilting-disk	Excellent	2.4–3.2	2.8–3.4	++
Heterograft bioprosthesis	Fair	1.0–1.7	1.3–2.7	+ to ++
Homograft bioprosthesis	Good	3.0–4.0	Not available	+

*The normal orifice area is 3.0 to 4.0 cm² for an aortic valve and 4.0 to 6.0 cm² for a mitral valve.

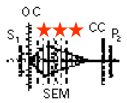
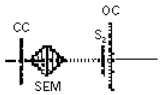
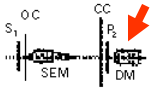
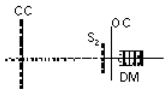
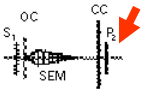
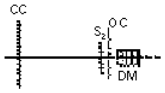
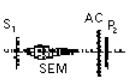
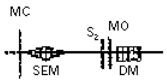
†A single plus sign denotes minimal thrombogenicity, and four plus signs maximal thrombogenicity.

High flow → Low flow

Aortic	Mitral
Yes	Yes
Yes	No
Yes	No
Yes	No

前一頁 下一頁

3

Type of Valve	Aortic Prosthesis: Normal Findings	Aortic Prosthesis: Abnormal Findings	Mitral Prosthesis: Normal Findings	Mitral Prosthesis: Abnormal Findings
Caged-Ball (Starr–Edwards)		Aortic diastolic murmur Decreased intensity of opening or closing click		Low-frequency apical diastolic murmur High-frequency holosystolic murmur
Single-Tilting-Disk (Bjork–Shiley or Medtronic–Hall)		Decreased intensity of closing click		High-frequency holosystolic murmur Decreased intensity of closing click
Bileaflet-Tilting-Disk (St. Jude Medical)		Aortic diastolic murmur Decreased intensity of closing click		High-frequency holosystolic murmur Decreased intensity of closing click
Heterograft Bioprosthesis (Hancock or Carpentier–Edwards)		Aortic diastolic murmur		High-frequency holosystolic murmur

NEJM 335:407,1996

Branuwald 6th ed. P 1699

前一頁 下一頁

4

What is abnormal in the abnormal?

- Loss of closing sound or opening sound
- Regurgitant murmur

- Life-threatening prosthetic valve dysfunction can occur ‘silently’